

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. Claims 1-14 are now pending, claims 1, 4, 8, and 10 being independent. In this Reply, Applicant has amended claims 1, 4, and 8 to clarify features recited therein and has added new dependent claims 12, 13, and 14.

Prior Art Rejection

Claims 1-11 stand rejected under 35 U.S.C. § 103 as allegedly being unpatentable over *Itoh et al.* (U.S. Patent 5,585,817) in view of *Ichikawa et al.* (U.S. Patent 6,127,998) and further in view of *Arakawa et al.* (U.S. Patent 5,500,675). This rejection is respectfully traversed.

The Claimed Invention

Independent claim 1 is directed to an image display apparatus generally comprising an imaging section and a display section. The imaging section recited in claim 1 includes: photoelectronic conversion devices arranged in the form of a matrix, vertical transfer paths arranged adjacent to the respective columns of the photoelectronic conversion devices, each of the vertical transfer paths transferring signal charges toward a lower end in accordance with vertical driving pulses supplied from the outside, transfer gates for transferring signal charges generated by the photoelectronic conversion devices to the respective vertical

transfer paths in accordance with field shift pulses supplied from the outside respectively, and output circuits for converting signal charges arrived at the lower ends of the vertical transfer paths to signals and outputting the signals in parallel column by column of the matrix, such that the imaging section outputs signals representing an image without horizontally transferring signal charges provided by said vertical transfer paths.

The display section recited in independent claim 1 includes: display devices arranged in the form of a matrix, input circuits, and a vertical driving circuit. Each of the display devices has a signal input terminal and a control signal input terminal, and displays an image represented by signals applied to the signal input terminal thereto at the time of application of driving pulses to the control signal input terminal. The input circuits receive signals output from the imaging section in parallel column by column and output signals corresponding the received signals to the signal input terminals of the display devices via signal buses in parallel column by column of the matrix. The vertical driving circuit outputs the driving pulses to the control signal input terminals of the display devices via control buses line by line of the matrix in a predetermined order.

Independent claim 1 has been amended to specify that the imaging section "outputs signals representing an image without

horizontally transferring signal charges provided by said vertical transfer paths." By providing an imaging section that outputs image signals from vertical transfer paths without requiring horizontal driving pulses, disclosed embodiments of the present invention are able to achieve reduced power consumption. (See e.g., p. 10, 11. 21-26 of the specification).

Independent claim 4 is directed to an image display apparatus comprising an imaging section (as substantially described above with regard to claim 1) and a display section, and further comprising a signal conversion section for processing signals output from the imaging section in parallel column by column and outputting the processed signals in parallel. The input circuits for the display section recited in claim 4 receive signals output from the signal conversion section in parallel and output signals corresponding to the received signals to signal input terminals of the display devices via signal buses in parallel column by column.

Like independent claim 1, independent claim 4 has been amended to specify that output circuits converts signal charges arriving at the lower ends of vertical transfer paths to signals and outputting the signals in parallel column by column of the matrix, such that the imaging section "outputs signals representing an image without horizontally transferring signal charges provided by said vertical transfer paths."

Independent claim 8 is directed to an image display apparatus generally comprising an imaging section; a signal conversion section; and a parallel-to-serial conversion section. The imaging section of claim 8 includes: photoelectronic conversion devices arranged in the form of a matrix; vertical transfer paths arranged adjacent to the respective columns of the photoelectronic conversion devices, each of the vertical transfer paths transferring signal charges toward a lower end in accordance with vertical driving pulses supplied from the outside; transfer gates for transferring signal charges generated by the photoelectronic conversion devices to the respective vertical transfer paths in accordance with field shift pulses supplied from the outside respectively; and output circuits for converting signal charges arrived at the lower ends of the vertical transfer paths to signals and outputting the signals in parallel column by column of the matrix, such that the imaging section outputs signals representing an image without horizontally transferring signal charges provided by the vertical transfer paths.

The signal conversion section of claim 8 processes the signals output in parallel from the imaging section column by column and outputs the processed signals in parallel, and the parallel-to-serial conversion section converts the signals output in parallel from the signal conversion section to serial signals.

Like independent claims 1 and 4, independent claim 8 has been amended to specify that the output circuits of the imaging section function such that the "imaging section outputs signals representing an image without horizontally transferring signal charges provided by said vertical transfer paths."

Independent claim 10 is directed to a display apparatus comprising: a serial-to-parallel conversion section; a signal conversion section; and a display section. The serial-to-parallel conversion section converts signals serially input thereto to parallel signals for output. The signal conversion section processes the signals output in parallel from the serial-to-parallel conversion section column by column and outputs the processed signals in parallel. The display section includes: display devices arranged in the form of a matrix, each of the display devices having a signal input terminal and a control signal input terminal, and displaying an image represented by signals applied to the signal input terminal thereto at the time of application of driving pulses to the control signal input terminal; input circuits for receiving signals output from the signal conversion section in parallel and outputting signals corresponding the received signals to the signal input terminals of the display devices via signal buses in parallel column by column of the matrix; and a vertical driving circuit for outputting the driving

pulses to the control signal input terminals of the display devices via control buses line by line of the matrix in a predetermined order.

The Asserted Grounds of Rejection/Deficiencies in the Rejection

In the Office Action dated November 20, 2002, the Examiner rejected all claims based on an asserted combination of *Itoh* and *Ichikawa*. In this Office Action, the Examiner relies on an additional secondary reference, *Arakawa*, as allegedly making up for deficiencies of the previous rejection based *Itoh* in view of *Ichikawa*. Applicant respectfully submits that the asserted combination of references fails to establish *prima facie* obviousness of any pending claim.

To establish *prima facie* obviousness, all claim limitations must be taught or suggested by the prior art and the asserted modification or combination of the prior art must be supported by some teaching, suggestion or motivation in the applied references or in knowledge generally available to one skilled in the art. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). The prior art must suggest the desirability of the modification in order to establish a *prima facie* case of obviousness. *In re Brouwer*, 77 F.3d 422, 425, 37 USPQ2d 1663, 1666 (Fed. Cir. 1995). It can also be said that the prior art must collectively suggest or point to

the claimed invention to support the findings of obviousness. *In re Hedges*, 783 F.2d 1038, 1041, 228 USPQ, 685, 687 (Fed. Cir. 1986); *In re Ehrreich*, 590 F.2d 902, 908-909, 200 USPQ 504, 510 (C.C.P.A. 1979).

In order to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a), the Examiner must provide particular findings as to why the two pieces of prior art are combinable. See *In re Dembiczak*, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999). The issue of whether there is motivation to modify a reference must be based on the objective evidence of record, not subjective belief or unknown authority. *In re Lee*, 81 USPQ2d 1430 (Fed. Cir. 2002). Broad conclusionary statements standing alone are not "evidence." A modification of the primary reference that would change its principle of operation is contrary to a finding of *prima facie* obviousness. MPEP § 2143.01.

In this case, Applicant finds no objective evidence to support the conclusion that the prior art, or knowledge generally available to those of ordinary skill in the art, suggests the particular modification of Itoh relied on to reject the claims. As described in the reply dated February 20, 2003, the combined image input/display apparatus of Itoh includes an image input section 20 and an image display section 10 with a data drive circuit 302, which is adapted to sequentially drive the columns of pixels, as

seen in Fig. 3. Recognizing differences between *Itoh* and the claimed invention, the Examiner relies on *Ichikawa* to conclude that:

One would have been motivated in view of the suggestion in *Ichikawa* that the matrix inputting adjustment method in conjunction with serial-parallel conversion mechanism is functionally equivalent to the desired input an[d] output circuits configurations. The use of matrix inputting adjustment and serial-parallel conversion mechanism helps function liquid crystal display as taught by *Ichikawa*.

Furthermore, the Examiner relies on *Arakawa* to conclude that:

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify *Itoh's* image input/output system to adapt *Arkawa's* [sic] vertical transfer paths as used in Fig. 1. One would have been motivated in view of the suggestion in *Arkawa* [sic] that the configuration of vertical transfer paths (31, 32) is functionally equivalent to the desired vertical transfer paths with the signals being transferred column by column. The use of vertical transfer paths helps function an image sensing apparatus as taught by *Arakawa et al.*

Therefore, the Examiner's rejection appears to be based on the conclusion that it would have been obvious to include a serial-parallel conversion element (from *Ichikawa*) and vertical transfer paths (from *Arakawa*).

Initially, Applicant notes that the Examiner's reliance on serial-to-parallel conversion in *Ichikawa* is not relevant to the invention of independent claims 1, 4, and 8, which do not recite

serial-to-parallel conversion. Furthermore, with reference to all pending claims, although the Examiner has made conclusionary statements that it would have been obvious to substitute components of *Itoh* with allegedly "functionally equivalent" features of *Ichikawa* and *Arakawa*, Applicant finds no evidence of record supporting the Examiner's conclusion of functional equivalency or suggesting a combination of these allegedly equivalent elements with the apparatus of *Itoh*. The Examiner's reasoning appears to rely on modification of *Itoh* that finds no suggestion in the objective evidence of record, and is, thus, based on improper hindsight reasoning.

Regarding the Examiner's reliance on *Arakawa*, although this reference discloses a solid-state image sensing arrangement in which a plurality of vertical transfer paths 31, 33 are arranged in first and second accumulation regions 4, 5 so as to be connected to the vertical transfer paths 3 of a photosensitive region 1 (see e.g., Fig. 10), this reference does not teach or suggest an imaging section as recited in independent claim 1, 4, and 8, having output circuits for converting signal charges arriving at the low end of vertical transfer paths to signals and outputting the signals in parallel column by column of the matrix, such that the imaging section outputs signals representing an image without horizontally transferring signal charges provided by the vertical transfer

paths. The principles embodied in the present invention are entirely different than that of the imaging device disclosed by Arakawa. Furthermore, it is not apparent how Itoh is being modified by the teachings of Arakawa (and Ichikawa) in a way that would satisfy all features of the present claims.

At least in view of the above, Applicant respectfully requests reconsideration and withdrawal of the Examiner's rejection under 35 U.S.C. § 103 based on the asserted combination of Itoh, Ichikawa, and Arakawa.

Conclusion

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Applicant respectfully petitions for a three (3) month extension of time pursuant to 37 C.F.R. §§ 1.17 and 1.136(a). A check in the amount of \$950.00 in payment of the extension of time fee is attached.

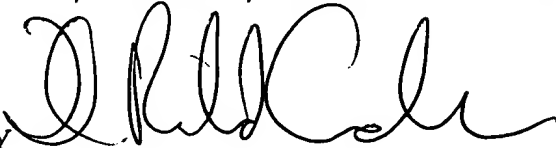
If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees

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required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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